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Legal Pluralism and Dynamic Property Rights

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ABSTRACT

Conventional conceptions of property rights focus on static definitions of property rights, usually as defined in statutory law. However, in practice there is co-existence and interaction between multiple legal orders such as state, customary, religious, project and local laws, all of which provide bases for claiming property rights. Legal anthropological approaches that recognize this legal pluralism are helpful in understanding this complexity. Individuals may choose one or another of these legal frameworks as the basis for their claims on a resource, in a process referred to as “forum shopping.” Legal pluralism can create uncertainty especially in times of conflict because any individual is unlikely to have knowledge of all types of law that might be relevant, and because rival claimants can use a large repertoire to lay claim to a resource. However, at the same time the multiple legal frameworks facilitate considerable flexibility for people to maneuver in their use of natural resources. Legal pluralism also introduces a sense of dynamism in property rights, as the different legal frameworks do not exist in isolation, but influence each other, and can change over time. Unless these aspects of property rights are recognized, changes in statutory law intended to increase tenure security may instead increase uncertainty, especially for groups with less education and contacts. This paper illustrates the implications of legal pluralism for our understanding of natural resource management and policies toward resource tenure, using the example of water rights.

Key words: property rights, legal pluralism, conflict, law uncertainty, natural resource management, water, water rights, tenure

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Legal Pluralism and Dynamic Property Rights

Ruth S. Meinzen-Dick¹ and Rajendra Pradhan²

1. INTRODUCTION

Of the institutions that affect how people interact with natural resources, property rights are among the most influential. Property rights not only affect who may use what resources, in what ways, but also shape the incentives people have for investing in and sustaining the resource base over time. Yet approaches to understanding property rights have too often regarded them as unitary and fixed, rather than diverse and changing. Reflecting these conceptions, policymakers have often sought to consolidate rights through statutory law in the name of providing tenure security or in the quest for efficiency through “well-defined” property rights.

However, such a conception of property rights is flawed on two counts: First, it does not reflect reality because it ignores the many different bundles of property rights that exist, and the multiple bases for claiming property rights. Second, even if a single, unchanging form of property rights was possible, it would not be well adapted to the uncertainties which are frequently encountered in dealing with natural resources.

In this paper we argue that it is important to recognize the multiple and often overlapping bases for claims, and to regard property rights and the uses of resources as

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negotiated outcomes.³ Not only does this lead to a more accurate understanding of the situation that resource users face, but it also allows greater flexibility to adapt to the changes and uncertainty. This is not to imply that non-statutory law is necessarily superior in terms of equity, efficiency, or other criteria. In many realms, state and even international law may be crowding out other forms of law, especially regarding property rights. However, other legal frameworks continue to have an influence. The next section presents the understanding of property rights derived from the perspective of legal pluralism, and how it allows us to understand the richness and complexity of claims on resources. We then discuss how legal pluralism relates to uncertainties of environment, livelihood, society and politics, and knowledge. In the subsequent section we apply these concepts to the case of water rights, to illustrate the application of legal pluralism, and how multiple, flexible and dynamic legal orders are more responsive to these uncertainties and changes than a single, fixed legal system with a static property regime.

2. LEGAL PLURALISM AND PROPERTY RIGHTS

To go beyond the limitations of many conventional treatments of property rights, it is useful to turn our analysis upside down. Instead of beginning with statutory law and regarding all behaviour as either following or deviating from those regulations, legal anthropologists argue for starting with the perspective of people's experience with access and control, in which individuals draw upon a range of strategies for claiming and

³ In this paper, property rights refers to rights over natural resources. However, concepts of legal pluralism to intellectual property rights could also help in understanding disputes over intellectual property rights, e.g. when communities reject the idea that corporations can patent seeds, human genes, or other products that are considered to be individual or public goods.

obtaining resources. From this vantage point, it is clear that multiple legal and normative frameworks coexist.

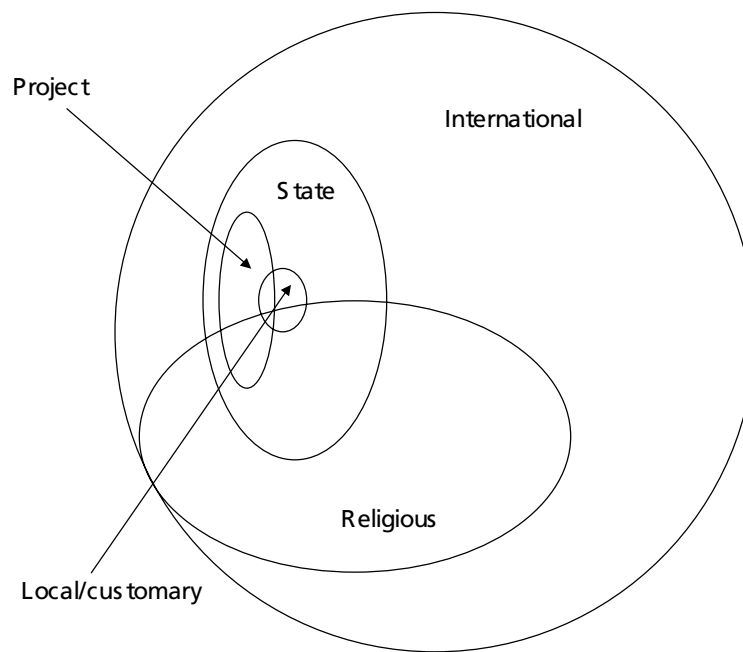
In most domains of social life and in most social settings more than one legal system (defined broadly) becomes relevant. For many social scientists, and especially legal anthropologists, law is not limited to acts, rules, administrative orders, court decisions etc. enacted or made by the various state organs. Law is understood very broadly as cognitive and normative orders generated and maintained in a social field such as a village, an ethnic community, an association, or a state.⁴ Any social field is able to generate and enforce rules or normative and cognitive repertoires. It is thus possible to have various kinds of law such as:

- state (or statutory) law as made by legislatures and enforced by the government;
- religious law, including both law based on written doctrines and accepted religious practice;
- customary law, which may be formal written custom or living interpretations of custom;
- project (or donor) law, including regulations associated with particular projects or programs, such as an irrigation project;
- organizational law, such as rules made by user groups; and
- a range of local norms, which may incorporate elements of other laws.

⁴ See Moore 1973.

The coexistence and interaction of multiple legal orders within a social setting or domain of social life is called legal pluralism.⁵ The possibilities for overlap of these different legal orders is illustrated in Figure 1.

Figure 1—Coexisting Multiple Legal Orders



The coexistence of several laws in one domain does not mean that all laws are equal, or equally powerful. In some contexts, especially in the context of state and local community relationships, state law is usually more powerful and used by state officials (e.g., in declaring and enforcing forests as state property). Statutory law can also be used by powerful outsiders to claim resources in ways that are not locally recognized as

⁵ For legal pluralism see, Griffiths 1986, Merry 1988, F. and K. von Benda-Beckmann and Spiertz 1996, 1997; Spiertz 2000.

legitimate. However, laws are only as strong as the institution or collectivity that stands behind them. Legitimizing institutions vary. The state, as represented by an appropriate government agency, is important, but it is not the only relevant one, and in many cases it may not be as relevant as village or ethnic communities, users groups, irrigation management committees, and so on. For example, despite state laws prohibiting discrimination based on caste or gender, low castes and women may be excluded from decision-making bodies due to local or religious laws.

In situations of legal pluralism, individuals can make use of more than one law to rationalize and legitimize their decisions or their behavior. We do not know in advance which of the several laws individuals will use in all cases because "Which specific repertoire, in which specific case, people will orient themselves to, will mostly be a matter of expediency, of local knowledge, perceived contexts of interaction, and power relations" (Spiertz 2000: 191). During disputes and negotiation, claims are justified by reference to legal rules. The disputants use different normative repertoires in different contexts or forums depending on which law or interpretation of law they believe is most likely to support their claims, a process known as forum shopping (K. von Benda-Beckmann 1984). Which law is accepted and enforced depends on power and social relationships between the different claimants. As groups interact more with "outsiders" who may not share the same community, religion, or other social field and hence do not recognize the legitimacy of the same laws and enforcement institutions, there may be a tendency to move toward statutory law and government enforcement or even, in the case of interactions between different countries, to international law, e.g. the Law of the Sea,

or attempts to involve the World Trade Organization in defining and enforcing intellectual property rights.

The different normative and cognitive orders may be sharply distinguished in some contexts, as for example, in the courts, but they are less sharply distinguished in the everyday life of local communities. At the local level we find a mixture of several normative orders, which are based on long historical tradition, e.g., customary law, new forms of self-regulation, elements of old and new state laws, donor laws, etc. This whole mixture of norms and rules that are expressed and used at the local level is called local law (F. and K. von Benda-Beckmann and Spiertz 1997).

A further complication in understanding property rights over natural resources is the need to go beyond unitary concepts of “ownership” to recognize that property rights is an "umbrella concept" which includes several types of rights to different forms and uses of resources (F. and K. von Benda-Beckmann and Spiertz 1996: 80). These various kinds of rights may be grouped into two broad categories of rights: 1) use rights and 2) decision-making rights to regulate and control resource use (F. and K. von Benda-Beckmann and Spiertz. 1997; Schlager and Ostrom 1992).

Following Wiber’s (1992) approach, property rights may be defined as claims to use or control resources by an individual or group that are recognized as legitimate by a larger collectivity and that are protected through law.⁶ Individuals or groups (users, community, corporation, state, etc.) may assert claims of various kinds over resources such as rights to use the resource, derive income from it, rights to control use and make rules regarding resource use and users, as well as rights to transfer it to another through

⁶ This paragraph is based largely on Pradhan and Brewer 1998.

sale, lease, gift, or inheritance. It is not sufficient to assert claims to the resource; unless claims are accepted by a larger collectivity than the claimants they are not considered legitimate. This becomes clear when there are conflicting claims.

Recognition of claims over resources is based on rules that define who has rights, the types of rights they have, and the procedures and conditions by which persons (individual or corporate) establish, maintain, transfer and lose rights. In many cases, different laws offer different definitions of rights. There usually are a plurality of rules or laws within a social field or locality that individuals can call upon in their discourse and negotiation.

Rules and laws themselves are subject to negotiation, reinterpretation, and change. The way in which people call upon different legal orders, and the negotiation between them, provides some of this dynamism. Nor is it only that local law adapts to be consistent with statutory law—the latter also changes taking into account a range of religious, customary, and other types of law. Thus, different legal orders should not be seen as isolated from one another, but as interacting, influencing each other, and “mutually constitutive” (Guillet 1998). How exactly these different legal orders interact and influence each other depends on power relationships between the 'bearers' of different laws.

Principles, rules or in short laws concerning property rights do not reflect actual practice or actual configuration of property rights relations. Many authors assume that rules can be derived from practice or that practice is necessarily and directly based on rules (c.f. Wiber 1992; Spiertz 2000). It is important to differentiate between “the legal construction of rights from the actual social relationships that connect concrete right

holding individuals, groups and associations with concrete and demarcated resources” (F. and K. von Benda-Beckmann and Spiertz 1997: 226). Elsewhere (F. and K. von Benda-Beckmann 2000), these are referred to as categorical and concretized rights, corresponding to general rights in principle, and specific rights that an individual can avail in specific contexts.

It is at the level of the actual social relationship concerning various forms of property that other types of rights and social-relationships become very significant, e.g., rights to land, to residence in a village, or to membership in a community. Power relationships are also very important for they often determine the distribution and actualization of rights. The actual rights relationships depend on specific contexts and are a product of locality, history, changes in resource flow, ecology, cropping pattern, and social relationships, negotiation and disputing. Laws are but one resource used in the strategies of individuals and groups to acquire, establish, protect, and continue their rights and laws, like rights, also change. The processes of acquiring and maintaining rights are as important as the rules that are used to justify claims (F. and K. von Benda-Beckmann and Spiertz 1997).

3. LEGAL PLURALISM AND UNCERTAINTY

While legal pluralism is applicable in almost all contexts, it is particularly important in contexts of uncertainty. Mehta et al. (2000) identify three types of uncertainty which play an important role in shaping human behavior:

- ecological uncertainty due to fluctuations in weather and other biophysical phenomena;

- livelihood uncertainties due to fluctuations in employment or other economic phenomena;
- and knowledge uncertainties due to incomplete understanding or predictability.

To this we would add a fourth category, of social or political uncertainty due to fluctuations in regimes and social power. We feel that this fourth category is as important as the other types of uncertainty, and has particular significance for property rights.

Legal pluralism can provide adaptive responses to ecological or livelihood uncertainties, as well as social or political uncertainties and changes. At the same time, legal pluralism can generate or increase knowledge uncertainties. The linkages between pluralism in property rights and different types of uncertainty include:

Ecological uncertainties: Unpredictable fluctuations in the natural resource base call for different sets of rules to deal with different situations. Who is allowed to use how much water or grazing land will differ in a drought, compared to a period of bountiful rainfall. Legal pluralism expands the repertoires available to people to apply in different situations. In particular, people who are experiencing hardship due to drought or other ecological fluctuations may appeal to a variety of norms regarding sharing and meeting basic human needs, instead of rules that give some the rights to exclude others during “normal” times. This is seen in situations as diverse as pastoralists in semi-arid areas of Africa exercising access options for grazing land (e.g. Mearns 1996; Ngaido and Kirk 2000), to irrigators in Bali “borrowing” water when their own system flows are

insufficient (Sutawan 2000). Such adaptations increase the livelihood security of households that depend on fluctuating natural resources.

Livelihood uncertainties: Changes in the ways in which natural resources can be used, as well as changes in who uses different resources often evoke different bases for claims on a resource. As in the case of ecological uncertainties, legal pluralism expands the bases of claims on the resource, and allows for dynamic adaptation to new circumstances.

For example, locally-defined or “customary” rights to forest or fishing resources may be sufficient to deal with subsistence level exploitation of the resource, but not to deal with outside users, new technologies that allow for more efficient exploitation of the resource, or market penetration that changes the value of the resources. In these cases national or even international law may be called upon to define and enforce rights and limits on resource exploitation. Pomeroy (2000) relates how fishers on San Salvador Island in the Philippines faced a loss of livelihood as outside fishers, integration into the global market for aquarium fish, and introduction of destructive fishing technologies (fine mesh nets, blast fishing, and use of cyanide) depleted fish stocks and were destroying the reefs that were needed for fish breeding grounds. In response, a community group worked to have portions of the fishing grounds declared a marine sanctuary, with other areas declared a marine reserve. This brought to bear both statutory law (a Municipal Ordinance) and rules of a newly created fishers’ association to enforce restrictions on use, in order to protect the resource base (coral reef and fish stocks) upon which fishers’ livelihoods depend.

Other instances of livelihood uncertainties evoking multiplicity of bases for claiming property rights are seen in programs that extend access to resources to provide livelihoods for more users. Government or donor-funded projects that seek to extend irrigation systems that were farmer-managed provide a clear example of this, as discussed below in the section on water rights.

In addition to an influx of new users, livelihood uncertainties can result from the removal of customary users, as when men migrate to cities and leave women to take over all farming activities. In such cases customary rules that limit women's participation in management bodies limit the control rights of female-headed households. However, new rules supported by the state, external donors, or NGOs may call for more female involvement, and hence provide a basis for stronger claims by women farmers.

Users may also acknowledge essential livelihood uses as a basis for claiming resources, even though formal rules prohibit it. For example, in the Kirindi Oya irrigation system in Sri Lanka, according to regulations from various government agencies, water from standpipes is not supposed to be used for bathing or gardens, and tank water is not supposed to be used for making clay pots, but informants responded that these uses are allowed by local norms: "because they need it and there is no other source" of the water. Even busloads of pilgrims who come to Buddhist holy sites in the area are given preference for water (Meinzen-Dick and Bakker 2000). In this context, as in many others, most people consider natural resources not only as commodities, but also as objects that have symbolic (including prestige and religious), social security and social exchange aspects (Pradhan and Meinzen-Dick 2001). The links between symbolic and

social security aspects of property rights are part of what Scott (1976) referred to as the moral economy.

Social and political uncertainty: Influxes of new migrants, changes in regimes, and other social and political upheavals create uncertainties that are at least as profound as ecological and livelihood uncertainties. Legal pluralism can both emerge from such conditions, as well as help people cope with these uncertainties. Smucker et al. (2000) relate how locally defined property rights to land, enforced by local recognition, offer peasants in Haiti defense against a predatory state. Unruh (2001) provides a more extreme example from postwar Mozambique, where massive displacement and resettlement of people from different areas disrupted many customary forms of property rights, but the state also lacked the capacity to define or arbitrate property rights. In this situation multiple rules of evidence were employed, including social (testimony establishing a link between a person and a community), cultural-ecological (signs of human activity on the landscape, like old planted trees), and physical (natural terrain features establishing familiarity with an area). Settling conflicts required bringing all these types of evidence to bear.

Social and political changes also bring profound changes to decision-making rights and authority. New political regimes can change laws and rules, as well as affecting which law or rule is to be applied, which reshapes property rights. Clear examples have been seen in the rise and fall of communist or socialist regimes in Eastern Europe, but even South Africa and Zimbabwe have had considerable restructuring of rights to land and water, based on state and customary laws, in the past few years with the rise of a new power structure (or at least the crumbling of the old).

In some contexts of social and political change, legal pluralism can increase uncertainty for local resource users. This is especially seen when statutory law does not recognize customary rights, and those with greater political connections, knowledge of state law, or access to the courts uses state law to override customary rights, in order to capture resources. This has been a contributing factor to the erosion of common property systems and loss of livelihoods for indigenous populations (see Bruce 1999).

Knowledge uncertainty: while legal pluralism can provide a means of coping with ecological, livelihood, social and political uncertainty, it also exacerbates knowledge uncertainty. No one will know all of the pertinent or possibly applicable legal frameworks, and what provisions they have regarding property rights. Instead, knowledge is partial and fragmented. A lawyer may know much of statutory law, a government official may know project regulations, a village elder may know customary law, and a priest may be an expert on religious law and norms related to rights, but each of them is likely to know less about the other possible legal frameworks. Other resource users are likely to have partial knowledge of several of the types of law that relate to property rights. In many countries, state laws are largely unknown in villages, and sometimes when new laws are promulgated, not only villagers but also government officials at the district or village levels are ignorant of the new laws (e.g. in Nepal).

The result is that resource users may act in ignorance of some definitions of property rights. For example, those who do not know that the state claims sole rights to harvest certain trees will continue to cut them, or newcomers may follow their understanding of state law and violate local rules that they do not know of. On the other

hand, someone who is aware that certain rules exist but is not sure what they are may act out of fear of violating unknown rules, whether those be unknown statutory or local laws.

The other form of knowledge uncertainty that legal pluralism creates or enhances is the knowledge of what other people will do. Institutional economists point out that the great advantage of institutions lies in the way they allow people to predict the behaviour of others, much as knowledge of traffic rules allows one to make assumptions about what others will do, and act on the basis of those assumptions. In common property theory, this predictability helps provide assurance that if one abides by the rules governing use of a resource, others will too, thereby overcoming the fear of free riders and the “tragedy of the commons.” But if multiple legal frameworks can be applied at the same time, and others may be abiding by different laws and definitions of property rights, then that assurance is eroded (just as, in the example of traffic rules, if some drivers are American and others British, one might not be able to predict on which side of the road others will be driving). If one cannot predict how property rights will be determined, tenure security is also eroded. These factors often lead economists interested in increasing efficiency, as well as policymakers and analysts interested in sustainable natural resource management, to seek to reduce pluralism and consolidate all under a unitary “rule of [state] law.”

While knowledge uncertainties may be inherent in legal pluralism, these are not necessarily major obstacles to equitable and sustainable natural resource management. Certainly the flexibility that legal pluralism allows provides an important coping strategy to deal with environmental, livelihood, and some types of social and political uncertainty. Consolidating all property rights under statutory law, even if it were possible, would be cumbersome and inappropriate to many situations, and hence we would sacrifice

adaptability to changing circumstances. Statutory law can even become a major source of livelihood uncertainty, especially to those who have less money, education, connections, or other assets to give them access to the state legal mechanisms. Recognizing diverse sources of property rights is more equitable because it offers most parties some basis for a claim on the resource. Furthermore, legal pluralism distributes knowledge uncertainties among the different stakeholders, so that no one has a monopoly on knowledge, nor is anyone likely to be totally without some notion of property rights. The interaction between legal frameworks provides a source of dynamism that can respond to changing circumstances.

What legal pluralism does call for is much more attention to negotiation processes. Forum shopping, by which different parties base their claims on whichever legal framework they feel best fits their situation, is inherent in situations of legal pluralism. Power relationships are entailed in these negotiations. Given the heterogeneous and hierarchical nature of local communities, negotiation means that the powerful often can establish stronger rights. Women, members of lower classes or otherwise disadvantaged groups often lack the knowledge and bargaining power needed to actualize their rights. Establishing effective platforms for negotiation is critical for effective natural resource management. For equity in distribution of concretized property rights, external intervention may be needed to “level the playing field,” to either strengthen the negotiating ability of disadvantaged groups, or expand the repertoire of claims they can make on a resource (e.g. by passing statutory laws giving women more claims to property). Without effective negotiating forums, conflicts can escalate, but

with effective means of negotiating, various stakeholders can adapt to changing conditions.

The discussion of water rights in the following section illustrates these points. Although many of these points would apply also to other natural resources such as land or trees, the fluid, or mobile nature of water makes it especially difficult to pin down fixed property rights, while its essential nature for all human, animal, and plant life makes it especially subject to regulation by religious, community, and other forms of non-state law.

4. EXAMPLES FROM WATER RIGHTS

...ultimately, all the arrangements linked with sharing water encumber water rights with so many customary constraints and restrictions that they tend to become simply nominal values which in their concrete aspect (that is, the quantity of water which someone with a water right actually acquires) are fluid and variable. As a result there is continued negotiation, which requires the mobilization of power, and this makes the definition of one's identity (either through lineage or status group membership) a primordial need (Hammoudi 1985: 28).

In many parts of the world, water rights are dynamic, flexible and subject to frequent negotiations (see Bruns and Meinzen-Dick 2000, R. Pradhan et al. 1997, R. Pradhan and F. and K. von Benda-Beckmann 2000). This is because water rights, like rights to natural resources in general, are embedded in social, political and economic relationships and are often closely tied to other rights. For example, rights to water are often closely coupled to land rights and rights to pasture may be tied to membership of a pastoral community. Changes in any of these relationships and rights affect property rights to natural resources.

However, water rights are perhaps more dynamic, flexible, and subject to continued negotiation than other natural resources because of the characteristics of water as a resource. Water is a mobile, fluid, and fugitive resource, with a great deal of inherent uncertainty regarding its quantity and location. The amount of water available in water sources such as rivers, lakes, reservoirs and aquifers depends on the vagaries of rainfall and hence varies from season to season and year to year. Environmental changes, such as deforestation or reforestation, often change the hydrological system of a watershed or river basin. This uncertainty of water availability is often compounded by floods and landslides, which may change river courses and destroy intake structures, making it impossible to convey water to the locations at the periods when it is needed. But there is demand and need for specific quantities of water at specific times and locations, especially for irrigation and domestic water uses. Water is needed on a daily basis for domestic needs and livestock, and too much or too little water supplied early or late affects the harvest of crops. Thus ecological uncertainties contribute to livelihood uncertainties.

Capturing and conveying water to the locations where it is to be used requires collective effort, both to appropriate and convey water and to make and enforce rules for appropriation, allocation and distribution. Because water is essential for life and virtually all economic enterprises, there often are multiple users and uses of the same water source. Further, there are often different categories of rights and rights holders to water as it flows along its course and is captured and impounded or conveyed by canals and pipes to different locations (U. Pradhan 1994; Meinzen-Dick 2000). For example, the state may claim ownership, control and use rights to a river throughout its course, while riparian

communities may claim control and use rights to the river water as it flows past their localities as against the claims of other communities located at a distance from the river which may claim use rights based on prior appropriation. The farmers who capture and convey water through infrastructures they constructed and operate will claim ownership, control and use rights to the water in their canals or wells. However, others may have tolerated access and limited use rights to water in the canals for irrigation as well as non-irrigation uses, such as for watering livestock, washing clothes and utensils, traditional mills, and mini hydro-electric plants (Meinzen-Dick and Bakker 2000; R. Pradhan and U. Pradhan 2000; Sodemba and Pradhan 2000).

The demand for water and the change in the uses of water have increased with the rapid growth of population and lifestyles, urbanization and industrialization. Although irrigation is still the largest sector of water consumption worldwide (and particularly in most Asian countries), municipal and industrial uses are growing as much as ten times faster. As a consequence, there has been a tremendous increase in competition and conflict over water between the state and water resource based companies on the one hand and local communities on the other, between different local communities and between members of the same local communities.

The need for water is urgent and time specific, but the uncertain supply of water from sources such as rivers and reservoirs has to be conveyed over a long distance, and there are many claimants to the water source for various uses such as irrigation, domestic use, industries, and waste disposal. As a result, the claimants for water need to frequently negotiate with other claimants to safeguard their share of the uncertain water supply. This is problematic in large river basins without a centralized authority to allocate water

shares and make water appropriation schedules (Dixit 1997; Gyawali and Dixit 1999). But a case study from Dang, Nepal by Adhikari and Pradhan (2000) shows that even when there is a centralized body to allocate water shares and schedules for irrigation in a smaller river basin, the rights holders are not necessarily guaranteed their traditional share of water.

Attempts by government agencies to regulate water use by different users by means of state law have often not succeeded in decreasing conflicts and may in fact have led to uncertainty about water rights for the traditional rights holders. As many studies have shown, in the process of negotiation for water rights, power relations are very important: the elites are more likely to negotiate better water rights for themselves than the less powerful (Hammoudi 1985; R. and U. Pradhan 1996; R. Pradhan and F. and K. von Benda-Beckmann 2000, Bruns and Meinzen-Dick 2000). “Water tends to flow away from the poor and powerless toward those better endowed politically and economically” (Ingram and Brown 1998: 119). This is because the elites control the decision-making processes that legitimize the rules for allocation and distribution of water (Adhikari and Pradhan 2000).

However, programs and alliances can help disadvantaged groups have a stronger negotiating position. For example, there is a public interest law firm assisting Hispanic *acequia*⁷ owners in New Mexico to protect their rights against golf courses, developers, and others seeking more water (NNMLS 2000). Although the *acequia* owners have the most senior water rights in New Mexico, they are at a disadvantage because they have less education, knowledge of English, and exposure to statutory law than the developers

⁷ *Acequias* are traditional small-scale irrigation systems.

and other interest groups. Key components of the strategy include legal literacy programs to make *acequia* owners aware of their rights and improve their understanding of statutory legal procedures; and working to have the process of statutory water rights adjudication recognize multiple forms of evidence, including testimony of elders regarding customary law and irrigation practices, to strengthen the bargaining power of the *acequias*.

The following examples show the complexity and dynamism of water rights in different types of situations. While most are drawn from irrigation in South Asia, rather than other sectors and countries, similar principles are to be found in many contexts, if we look beyond simple statutory explanations.

Dry seasons and years: In times of drought and water scarcity, the rules applied during normal periods or periods of water abundance are often negotiated. Examples include the temporary reallocation of land in the *bethma* system in Sri Lanka (Spiertz and de Jong 1992), “borrowing” or rearrangement of water flows between Balinese *subaks*, and farmers in some villages in Nepal being allowed to 'steal' water or given tolerated access during drought seasons (K.C. and Pradhan 1997; R. Pradhan and U. Pradhan 2000). According to Nepalese state law irrigation should begin with the fields nearest the water source and then move serially down the canal (see Pradhan 2000). However, the application of this rule varies between systems. It is usually applied when the water flow is abundant but in times of scarcity, water distribution may follow a rotation system in which the head and tail ends receive water first alternately so that there is a more equitable distribution of water, especially if the tail enders are powerful (R. Pradhan et al. 1997, R. Pradhan and F. and K. von Benda-Beckmann 2000). In these circumstances,

norms that appeal to sentiments of equity, community ties, religion and so on come into play.

Rebuilding water systems: At the other extreme of water supplies, when floods and landslides destroy structures or change the course of a river, then the claimants have to negotiate and renegotiate rights to water, especially the allocation of water shares and turns. Shukla et al. (1997) describe one such case in the plains of Nepal, where frequent floods destroy the fragile diversion weirs. The farmers of the different irrigation systems then have to negotiate new locations of their intake structures and water shares from the river. The farmers belonging to separate irrigation systems have to renegotiate water shares and turns to their branch canals. In such cases, the location of the intake structures and the water allocation and distribution rules are based on compromises reached during disputes and negotiations rather than directly on the provisions of the Nepalese state law.⁸ Benjamin and Shivakoti (2002: 58) explain: “Whatever laws existed in the capital, with the exception of those pertaining to taxation and order, were not necessary structures by which village people guided their lives.” Power relationships often determine which sections of farmers get better locations for intake structures and more favorable water shares and turns. Conversely, Lam (1998) found that rebuilding systems with permanent headworks instead of those that require annual replacement could, by reducing the labor requirements of a system, weaken the bargaining power of the tail enders (because head enders would no longer need their labor to rebuild the system), and hence weaken the effective water rights of the tail enders. It is ironic that increasing concrete in the

⁸ See Pradhan (2000) for details of the state law.

headworks reduced the concretized water rights of tail enders. Thus a program to reduce environmental uncertainty can have the effect of increasing livelihood uncertainty.

Expanding systems: In many parts of the world, especially in the 'developing countries' heavily dependent on agriculture, a lot of money has been spent by donor agencies and national governments to expand irrigated agriculture, either by constructing new irrigation systems or more often by expansion of existing systems (Jones 1995). Expansion of existing systems with government or donor funds leads to negotiations between old and new rights holders and claimants. While original rights holders may claim rights over the irrigation system and water by virtue of their own (or their ancestors') investment in the system, newcomers claim rights to the enlarged system and water by virtue of project investment and government grants. The new claimants argue that because the enlarged irrigation system is no longer private or common property of the original rights holders but 'public' or government property by virtue of the project investment or government grant, the original rights holders can no longer deny the new claimants with land in the official command area rights to use the water and to participate in decision-making processes relating to irrigation management. Different legal orders construct rights, rights holders, and property regimes of the same irrigation system differently. Whose claims will be accepted or what kind of water rights arrangements will be effectuated depends on negotiation between the rival claimants and their manifold social, political and economic relationships as well as other norms brought into play (Brewer 2000; F. and K. von Benda-Beckmann 2000; R. Pradhan and U. Pradhan 1996; R. Pradhan, Haq and U. Pradhan 1997).

Changing power and alliances: Though water rights are constructed by legal orders, the actualization of water rights, both categorical and concrete, are effectuated by social processes because water rights are embedded in social, political and economic relationships (F. and K. von Benda-Beckmann 2000). Changes in these relationships affect water rights relationships. Adhikari and Pradhan (2000) describe how in a river basin in Dang, with every change in political regime in Nepal, a different set of elites emerged who were able to control the decision-making body, which allocated water shares and turns. The new political elites assigned to themselves and their supporters more water shares and better turns than they formerly enjoyed. In another case, after the restoration of democracy in Nepal, the low caste tail enders in an irrigation system that had been expanded with a grant from a donor agency were finally able to establish secure water rights and a better supply of water once they received support from a strong political party and the tail enders threatened violence against the upper caste farmers in the head and middle sections of the system (Pradhan, Haq and Pradhan 1997). In Nepal, women, long denied rights to participate in decision-making processes and to become members of management committees of irrigation systems, have lately acquired rights, even if only categorical, to become members of committees and to participate in meetings, thanks mainly to recent state laws and the efforts of donor agencies and NGOs. Current studies by FREEDeAL reveal that women's irrigation water rights have improved, even if only marginally, due to changes, however small, in gender relations.

Intersectoral competition: The increasing intersectoral competition and conflicts over water also affect water rights of traditional rights holders. Because of the growing financial and environmental costs of building new water control structures, water is

increasingly taken out of agriculture for industries, including tourism, domestic, and especially urban, water supply, and recreation (golf courses and swimming pools), or the flow of the river altered to generate hydro-electricity. Cities and industries use a variety of means to divert water from other uses (especially agriculture). In some cases (such as New Mexico, California, or Chile) there are mechanisms for water trades or sales, that implicitly or explicitly acknowledge the prior rights of farmers, negotiate with them, and provide various forms of compensation (Rosegrant and Ringler 1998). At the other extreme there are also numerous examples of extra-legal maneuvers and subversive means such as unauthorized pumping of water from irrigation canals (Dixit 1997; Kurnia et al. 2000). In between lies a range of other practices such as government administrative orders transferring water to municipal and industrial uses, or purchasing or renting irrigated land in order to take the water for a factory or city. Because of the disposal of sewage, industrial effluents, and agricultural chemicals, intersectoral competition over water is not over quantities alone, but also affects quality. Intersectoral water transfers have especially affected water rights of irrigators but also rights of citizens to clean rivers, used as sources for domestic water supply and for religious purposes (ritual bathing, etc.). As yet, most types of water rights and enforcing institutions have not been able to address water quality issues adequately.⁹

Drinking water: Following the Second World Water Forum, there has been considerable international and national debate over whether access to basic water should be considered a “basic human right.” But whether or not national and international

⁹ The issue of water quality as an important aspect of water rights has been addressed by Thapa and Pradhan (2001)

bodies endorse this principle, many religious doctrines and local norms dictate that rights to domestic water supplies, especially for drinking purposes, override or overflow the narrow definitions of property regimes. For example, according to Nepalese state law valid until 1990 and which is still used as local law in the villages, the proprietor of land on which a water source such as a spring or well is located is the 'owner' of the water source. The owner has the right to exclude other villagers from using the water in his or her land. However, in most villages, the owner's co-villagers have rights to use the water for domestic purposes, especially for drinking and cooking, by virtue of a Hindu norm. The landowner may appeal to state or one version of local law to prohibit other villagers from using the water but social pressure and appeal to a religious norm would force him to grant use rights to the villagers (Upreti 2000). Depending on which law is used, water located in someone's land is either 'private' or 'common' property. However, despite religious laws about granting access to drinking water for all, low caste or low status households and individuals may have difficulty in concretizing their rights even to drinking water, as Sadeque's (2000) study of competition between deep irrigation tubewells and shallow domestic pumps shows in Bangladesh. What all these point to is, as Hammoudi (1985) observed, that water rights are relational, that is, they are relationships between people over water (see also F. and K. von Benda-Beckmann 2000). In other words, what one holds in one's hand is not water but relations, relations which are often hierarchical, fluid and transitory, subject to change like the availability and distribution of water.

5. CONCLUSIONS

Rigid conceptions of property rights as a government-issued title linking a person with a piece of property do not capture the complexity and dynamism of property rights. Property rights are mainly about claims over resources and relationships between the claimants, both of which are subject to changes due to ecological, livelihood, knowledge and social and political uncertainties, as well as to the plurality of and changes in laws. Concretized rights are subject to negotiation and disputes, which in turn are influenced by political and economic power. Recognizing this complexity is essential for more accurate research as well as policies.

In many parts of the world, water rights are especially dynamic, flexible and subject to frequent negotiations because of uncertain water supply, damages to intake structures due to floods and landslides, and social, economic and political changes. Multiple, flexible and dynamic legal orders are more responsive to these uncertainties and changes than a single, fixed legal system with static property regime. With every change in water supply from a water source, introduction of new uses or users, change in property regime, or social or political upheaval, old rights holders and new claimants dispute and negotiate and renegotiate their water rights relationships. In the process of disputes and negotiations, the claimants refer to different sets of legal orders or different interpretations of the same legal order to legitimise their claims. A single, rigid rule for allocation and distribution of water is unsuitable for taking into account the uncertainties in the quantities and timings of water supply for multiple users and uses.

Is water a special case or do the arguments we have been making apply to other natural resources? The fluid nature of water certainly enhances the uncertainty and need

for flexibility in dealing with this resource, and the long history and intimate connection between water and life have contributed to the multiplicity of legal orders that address who should have how much water, in what places for what uses. However, there is enough evidence of legal pluralism in other resources that researchers and policymakers should be aware of the relevance of multiple legal frameworks. Legal pluralism is likely to be especially significant where the resource base fluctuates (associated with ecological uncertainties) and population exploiting it is changing (livelihood or social and political uncertainties).

Instead of looking for clearly defined rules within a single, coherent legal system, it is more useful to recognize the ambiguity of rules, and the multiplicity of legal systems. This ambiguity and pluralism gives scope for human agency, through forum shopping and adapting rules in the concretization of rights. Such agency is critical for dealing with uncertainties that arise from environmental fluctuations, livelihood changes, social and political upheavals, and other sources.

It is often better to identify the overlapping and polycentric forms of governance that influence resource management than to try to identify a single authority, whether it be the state or formal user groups. Farmer managed irrigation systems, with their flexible rules and rights embedded in social, political and economic relationships, may be better able to adapt rules and rights to such changes than irrigation systems managed by government agencies. To enable institutions to adapt to uncertainty, programs seeking to set up user groups to manage resources should allow flexibility and adaptation in the organizations, not seek to specify all the rules from the outset.

At the same time, attention to local law alone is not sufficient. We should not assume that the laws created by local groups would be more equitable than those promulgated by the state, or even that local groups have sufficient technical knowledge to manage their resources. Local laws can be highly inequitable. Further, we have seen many cases in which power differences and social relations obstructed the actualization of rights, especially for women or low-status groups. In other cases, local and customary users have lost access to resources when outsiders or those with greater access to courts or government agencies have used statutory law to override property rights based on other legal frameworks.

Externally-defined laws (from the government, projects, or newly developed organizations) can strengthen customary property rights (e.g. by recognizing rights of indigenous peoples) or even provide disadvantaged groups with additional bases for claiming property rights, and thereby increase their bargaining power in negotiations for resources. Such law then becomes a 'resource' that can be used by the disadvantaged groups in their struggles over natural resources (F. von Benda-Beckmann and van der Velde 1992). However, for this to be effective, new laws aimed at strengthening the rights of the poor or other marginal groups must be accompanied by programs to create awareness by all parties, so that the new laws can be cited and accepted in the negotiation process.

In general, legal pluralism calls for greater humility in policies and programs. It is not just a matter of getting the “right” law or “right” institution to allocate or manage resources. Instead, rights to resources will be determined through messy, dynamic

processes. Yet this also provides the scope to respond to the ecological, livelihood, knowledge and social or political uncertainties that all resource users face.

REFERENCES

- Adhikari, Madhukar and Rajendra Pradhan. 2000. Water rights, law and authority: changing water rights in the Bhamke Khola basin. In *Water, land and law: Changing rights to land and water in Nepal*, ed. Rajendra Pradhan, Franz von Benda-Beckmann and Keebet von Benda-Beckmann. Kathmandu: FREEDEAL. Wageningen: WAU. Rotterdam: EUR.
- Benjamin, Paul and Ganesh P. Shivakoti. 2002. Farming in the Hamalayas and a history of irrigation in Nepal. In *Improving Irrigation Governance and Management in Nepal*, ed. Ganesh P. Shivakoti and Elinor Ostrom. Oakland, Calif: ICS Press.
- Benda-Beckmann, Franz von and M. van der Velde (eds.). 1992. *Law as a resource in Agrarian struggles*. Wageningen Sociologische Studies 33. Wageningen, the Netherlands: Poduc.
- Benda-Beckmann, Franz von and Keebet von Benda-Beckmann. 2000. Gender and the multiple contingencies of water rights in Nepal. In *Water, land and law: Changing rights to land and water in Nepal*, ed. Rajendra Pradhan, Franz von Benda-Beckmann and Keebet von Benda-Beckmann. Kathmandu: FREEDEAL. Wageningen: WAU. Rotterdam: EUR.
- Benda-Beckmann, Franz von, Keebet von Benda-Beckmann and H. L. Joep Spiertz. 1996. Water rights and water policy. In *The role of law in natural resource management*, ed. H. L. Joep Spiertz, and Melanie G. Wiber. The Hague, The Netherlands: VUGA.
- Benda-Beckmann, F. von, K. von Benda-Beckmann and J. Spiertz. 1997. Local law and customary practices in the study of water rights. In *Water rights, conflict and policy*, ed. Rajendra Pradhan, Franz von Benda-Beckmann, Keebet von Benda-Beckmann, H.L.J. Spiertz, Shantam S. Khadka & K. Azharul Haq. Colombo: IIMI.
- Benda-Beckmann, Keebet von. 1984. *The broken staircase to consensus: Village justice and state courts in Manangkabau*. Dordrecht, The Netherlands: Foris.
- Brewer, Jeffrey D. 2000. Negotiating seasonal water allocation rules in Kirindi Oya, Sri Lanka. In *Negotiating Water Rights*, ed. Bryan R. Bruns and Ruth S. Meinzen-Dick 136. London: Intermediate Technology Publications.
- Bruce, John W. 1999. Legal basis for management of forest resources as common property. Community Forestry Note No. 14. Rome, Italy: FAO.
- Bruns, Bryan Randolph and Ruth S. Meinzen-Dick (eds.). 2000. *Negotiating Water Rights*. London: Intermediate Technology Publications.

- Dixit, Ajaya. 1997. Inter-sectoral water allocation: A case study in Upper Bagmati Basin. In Rajendra Pradhan, Franz von Benda-Beckmann, Keebet von Benda-Beckmann, H.L.J. Spiertz, Shantam S. Khadka & K. Azharul Haq (eds.), *Water Rights, Conflict and Policy*, pp. 195-220. Colombo: IIMI.
- Griffiths, J. 1986. What is legal pluralism? *Journal of Legal Pluralism* 24: 1-50.
- Guillet, David. 1998. Rethinking legal pluralism: Local law and state law in the evolution of water property rights in northwestern Spain. *Comparative Studies in Society and History* 2: 97-117.
- Gyawali, Dipak and Ajaya Dixit. 1999. Fractured institutions and physical interdependence: Challenges to local water management in the Tinau River Basin, Nepal. In *Rethinking the mosaic: Investigations into local water management*, ed. Marcus Moench, Elisabeth Caspari, and Ajaya Dixit. Kathmandu and Boulder, Colorado: Nepal Water Conservation Foundation and Institute for Social and Environmental Transition.
- Hammoudi, A. 1985. Substance and relation: Water rights and water distribution in the Dra valley. In *Property, social structure, and law in the modern Middle East*, ed. A. E. Mayor. Albany, NY: State University of New York Press.
- Ingram, Helen and F. Lee Brown. 1998. Commodity and community water values. Experiences from the U.S. Southwest. In *Searching for equity: Conceptions of justice and equity in peasant irrigation*, ed. Rutgerd Boelens and Gloria Davila. Essen, the Netherlands: Van Gorcum.
- Jones, William I. 1995. *The World Bank and irrigation*. Washington DC: World Bank.
- K. C., Durga and Rajendra Pradhan. 1997. Improvement and enlargement of a farmer managed irrigation system in Tanahu: Changing rights to water and conflict resolution. In *Water rights, conflict and policy*, ed. Rajendra Pradhan, Franz von Benda-Beckmann, Keebet von Benda-Beckmann, H.L.J. Spiertz, Shantam S. Khadka & K. Azharul Haq, Colombo: IIMI.
- Kurnia, Ganjar, Teten W. Avianto and Bryan Randolph Bruns. 2000. Farmers, factories and the dynamics of water allocation in West Java. In *Negotiating water rights*, ed. Bryan R. Bruns and Ruth S. Meinzen-Dick. London, England, UK: Intermediate Technology Publications.
- Lam, Wai F. 1998. *Governing irrigation systems in Nepal: Institutions, infrastructure, and collective action*. Oakland, CA: ICS Press.
- Mearns, Robin. 1996. Community, collective action and common grazing: The case of post-socialist Mongolia. *Journal of Development Studies* 32(3): 297-339.

- Mehta, Lyla, Melissa Leach, Peter Newell, Ian Scoones, K. Sivaramakrishnan, and Sally-Anne Way. 2000. *Exploring understandings of institutions and uncertainty: New directions in natural resource management*. IDS Discussion Paper 372. Brighton, UK: Institute of Development Studies.
- Meinzen-Dick, R.S. 2000. Public, private, and shared water: groundwater markets and access in Pakistan. In *Negotiating water rights*, ed. Bryan R. Bruns and Ruth S. Meinzen-Dick. London: Intermediate Technology Publications.
- Meinzen-Dick, Ruth S. and Margaretha Bakker. 2000. *Water rights and multiple water uses: framework and application to Kirindi Oya irrigation system, Sri Lanka*. EPTD Discussion Paper 59. Washington, D.C.: International Food Policy Research Institute.
- Merry, S. E. 1988. Legal pluralism. *Law and Society Review* 22: 869-896.
- Moore, Sally, S.F. 1973. Law and Social Change: The Semi-autonomous field as an appropriate field of study. *Law and Society Review* 70: 719-746.
- Ngaido, Tidiane and Michael Kirk. 2000. Collective action, property rights, and devolution of rangeland management: Selected examples from Africa and Asia. In *Collective action, property rights, and devolution of natural resource management: Exchange of knowledge and implications for policy*, ed. Ruth S. Meinzen-Dick, Anna Knox, and Monica Di Gregorio. Feldafing, Germany: Zentralstelle für Ernährung und Landwirtschaft
- NNMLS (Northern New Mexico Legal Services). 2000. Stream adjudications, acequias, and water rights in Northern New Mexico. In *Negotiating water rights*, ed. Bryan Randolph Bruns and Ruth S. Meinzen-Dick. London, England, UK: Intermediate Technology Publications.
- Pomeroy, Robert S. 2000. Devolution and fisheries comanagement. In *Collective Action, Property Rights, and Devolution of Natural resource management: Exchange of knowledge and implications for policy*, ed. Ruth S. Meinzen-Dick, Anna Knox, and Monica di Gregorio. Feldafing, Germany: Zentralstelle für Ernährung und Landwirtschaft
- Pradhan, Rajendra. 2000. Land and water rights in Nepal (1854-1992). In *Water, land and law: Changing rights to land and water in Nepal*, ed. Rajendra Pradhan, Franz von Benda-Beckmann and Keebet von Benda-Beckmann. Kathmandu: FREEDEAL. Wageningen: WAU. Rotterdam: EUR.
- Pradhan, Rajendra, Franz von Benda-Beckmann and Keebet von Benda-Beckmann (eds.). 2000. *Water, land and law: Changing rights to land and water in Nepal*. Kathmandu: FREEDEAL. Wageningen: WAU. Rotterdam: EUR.

- Pradhan, Rajendra, Franz von Benda-Beckmann, Keebet von Benda-Beckmann, H.L.J. Spiertz, Shantam S. Khadka & K. Azharul Haq (eds.). 1997. *Water rights, conflict and policy*. Colombo: International Water Management Institute.
- Pradhan, Rajendra and Jeffery Brewer. 1998. Water Rights in Nepal. Manuscript report prepared for IIMI.
- Pradhan, Rajendra, K.A. Haq and Ujjwal Pradhan. 1997. Law, rights and equity: Implications of state intervention in farmer managed irrigation systems. In *Water rights, conflict and policy*, ed. Rajendra Pradhan, Franz von Benda-Beckmann, Keebet von Benda-Beckmann, H. L. J. Spiertz, Shantam S. Khadka & K. Azharul Haq. Colombo: International Water Management Institute.
- Pradhan, Rajendra and Ruth S. Meinzen-Dick. 2001. Which rights are right? Water rights, culture, and underlying values. Paper presented at Water, Human Rights, and Governance meeting, Kathmandu, February 26-March 2, 2001.
- Pradhan, Rajendra and Ujjwal Pradhan. 1996. Staking a claim: Law, politics and water rights in farmer managed irrigation systems in Nepal. In *The role of law in natural resource management*, ed. H. L. Joep Spiertz and Melanie G. Wiber. The Hague, The Netherlands: VUGA.
- Pradhan, Rajendra and Ujjwal Pradhan 2000. Negotiating access and rights: Disputes over rights to an irrigation water source in Nepal. In *Negotiating water rights*, ed. Bryan R. Bruns and Ruth S. Meinzen-Dick. London: Intermediate Technology Publications.
- Pradhan, Ujjwal. 1994. Farmers' water rights and their relation to data collection and management. In *From farmers' fields to data fields and back*, ed. J. Sowerwine, Ganesh Shivakoti, Ujjwal Pradhan, Athutosh Shukla, and Elinor Ostrom. Kathmandu: International Water Management Institute and IAAS.
- Rosegrant, Mark W. and Claudia Ringler. 1998. Impact on food security and rural development of reallocating water from agriculture. *Water Policy* 1:567-586.
- Sadeque, Syed Zahir. 2000. Nature's bounty or scarce commodity: Competition and consensus over groundwater use in rural Bangladesh. In *Negotiating water rights*, ed. Bryan R. Bruns and Ruth S. Meinzen-Dick. London: Intermediate Technology Publications.
- Schlager, Edela and Elinor Ostrom. 1992. Property-rights regimes and natural resources: A conceptual analysis. *Land Economics* 68(2): 249-62.
- Scott, James C. 1976. *The moral economy of the peasant: Rebellion and subsistence in Southeast Asia*. New Haven, Connecticut: Yale University Press.

- Shukla, Athutosh, Narayan R. Joshi, Ganesh Shivakoti, Rabi Poudel and Narayan Shrestha. 1997. Dynamics in water rights and arbitration on water right conflicts: Cases of farmer managed irrigation systems from East Chitwan. In *Water Rights, Conflict and Policy*, ed. Rajendra Pradhan, Franz von Benda-Beckmann, Keebet von Benda-Beckmann, H. L. J. Spiertz, Shantam S. Khadka & K. Azharul Haq. Colombo: International Water Management Institute.
- Smucker, Glenn R., T. Anderson White, Michael Bannister. 2000. *Land tenure and the adoption of agricultural technology in Haiti*. CAPRI Working Paper 6. Washington DC: International Food Policy Research Institute.
- Sodemba, Indra and Rajendra Pradhan. 2000. Land and water rights in Thulo Sangrumba, Ilam. In *Water, land and law: Changing rights to land and water in Nepal*, ed. Rajendra Pradhan, Franz von Benda-Beckmann and Keebet von Benda-Beckmann. Kathmandu: FREEDEAL. Wageningen: WAU. Rotterdam: EUR.
- Spiertz, H. L. Joep. 2000. Water rights and legal pluralism: Some basics of a legal anthropological approach. In *Negotiating Water Rights*, ed. Bryan R. Bruns and Ruth S. Meinzen-Dick. London: Intermediate Technology Publications.
- Spiertz, H. L. Joep and I. J. H. de Jong. Traditional law and irrigation management: The case of Bethma. In *Irrigators and engineers: Essays in honor of Lucas Horst*, ed. Geert Diemer and J. Slabbers. Amsterdam: Thesis Publishers.
- Spiertz, Joep and Melanie G. Wiber (eds.). 1996. *The role of law in natural resource management*. The Hague, The Netherlands: VUGA.
- Sutawan, Nyoman. 2000. Negotiation of water allocation among irrigators' associations in Bali, Indonesia. In *Negotiating water rights*, ed. Bryan R. Bruns and Ruth S. Meinzen-Dick. London: Intermediate Technology Publications.
- Thapa, Sunita and Rajendra Pradhan. 2001. Is the Bagmati River just water flowing between two banks? The consequences of river pollution on water rights. Paper presented at the workshop on Water, Culture and Gender: A Work-In-Progress. Kathmandu, July 27, 2001
- Unruh, Jon. 2001. *Land dispute resolution in Mozambique: Evidence and institutions of agroforestry technology adoption*. CAPRI Working Paper 12. Washington DC: International Food Policy Research Institute.
- Upreti, Bishnu R. 2000. Community level water use negotiation: Implications for water resource management. In *Water, land and law: Changing rights to land and water in Nepal*, ed. Rajendra Pradhan, Franz von Benda-Beckmann and Keebet von Benda-Beckmann. Kathmandu: FREEDEAL. Wageningen: WAU. Rotterdam: EUR.

Wiber, Melanie G. 1992. Levels of property rights and levels of law: a case study from the northern Philippines. *Man* (N.S.) 26: 469-92.

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